

WHAT IS CLAIMED AS NEW IS AS FOLLOWS

1. A self-aligning cutter hub assembly for use in an underwater pelletizer connected to a drive shaft and enabling cutter blades on a cutter hub to be aligned with and move in parallel relation to a die face on an extrusion die plate, said cutter hub assembly comprising a centrally located axial bore defined by an inner surface on said cutter hub, said inner surface of the bore being partially spherical, an adapter rigidly mountable on an end of said drive shaft and received in said bore, said adapter including a partially spherical outer surface with the partially spherical surfaces being closely related and matching each other, each of the partially spherical surfaces including a recess receiving a torque transmitting member partially received in each of the recesses in the matching surfaces to drivingly connect the hub to the drive shaft and enable pivotal movement of the hub on said end of said drive shaft, and an assembly retainer on said cutter hub to retain said torque transmitting member in said recesses.

2. The cutter hub assembly as defined in claim 1, wherein said torque transmitting member is a spherical ball.

3. The cutter hub assembly as defined in claim 2, wherein said assembly retainer is a plate mounted on said hub and forming an obstruction at an outer end of said recess in the hub to retain the ball in the recess.

4. The cutter hub assembly as defined in claim 2, wherein said assembly retainer includes a spring pin inserted into

an angled passageway with one end of the pin extending into the recess in the hub to prevent the ball from exiting the recess.

5. The cutter hub assembly as defined in claim 1, wherein said partially spherical surface in the cutter hub includes an axial semicylindrical recess extending from an end surface of said cutter hub, said partially spherical surface in the cutter hub including recesses extending circumferentially to both sides of the semicylindrical recess in the cutter hub to enable insertion of the partially spherical surface of the adapter into cutter hub bore when the adapter is oriented in 90° relation to the cutter hub and inserted into the cutter hub bore with the semicylindrical recess receiving the torque transmitting member and the circumferential recesses receiving the partially spherical surfaces on the adapter to enable assembly of the adapter by moving it inwardly into the bore when in a 90° relation to the cutter hub and then pivoting it 90° to orient the partially spherical surfaces in registry with each other.

6. In a self-aligning cutter hub for connection with a drive shaft to enable the hub to pivot universally in relation to a rotational axis of the drive shaft, said hub including a bore therethrough having an inner surface provided with an arcuate curvature having a center at the center of the hub, an adapter received in said bore for mounting on a drive shaft, said adapter having an arcuately curved outer surface having a center at the center of the hub to enable relative angular movement of the hub as the edge portions of the adapter move out of alignment with the end surfaces of the hub and torque transmitting members interconnecting

the outer surface of the adapter and the inner surface of the hub bore, said torque transmitting members being spherical balls partially received in recesses in each of the curved surfaces and a retainer associated with each ball receiving recess in said hub bore to retain the balls in the recesses.

7. The cutter hub as defined in claim 6, wherein the external surface of the adapter includes a pair of semispherical recesses, the internal surface of the bore including axial recesses receiving the torque transmitting balls and enabling insertion of the exterior surface of the adapter into the interior surface of the bore when the adapter is at 90° to the bore with the adapter being rotated 90° to be received within the bore with the matching curved surfaces and the torque transmitting balls retaining the adapter in the bore after assembly, said retainer including an obstruction in an end portion of each recess in the internal surface of the bore to prevent the balls from exiting the recesses in the bore.

8. The cutter hub as defined in claim 7, wherein said obstruction comprises a retainer member secured in closing relation to an open end of said recesses in the interior surface of said hub bore to retain said balls in said recesses.

9. The cutter hub as defined in claim 8, wherein said retainer member is a circular plate is secured in place by a screw threaded fastener threaded into said hub.

10. The cutter hub as defined in claim 7, wherein said obstruction comprises spring pins inserted into angled passageways

in said hub, said pins extending into the open end of said recesses to retain said balls in said recesses in said hub.

11. A self-aligning cutter hub for use in an underwater pelletizer connected to a drive shaft and enabling cutter blades on the cutter hub to be aligned with and move in substantially parallel relation to a die face on an extrusion die plate, said cutter hub including a centrally located partially spherical inner surface, an adapter having a partially spherical outer surface engaged with the partially spherical inner surface on the hub to enable universal pivotal movement between the hub and adapter, a torque transmitting member interconnecting said partially spherical surfaces to transmit torque from said adapter to said hub, said adapter secured to a drive shaft for transmitting torque to said cutter hub and a retainer structure associated with the partially spherical surfaces to retain said torque transmitting member in interconnected relation with said partially spherical surfaces.

12. In combination, a self-aligning cutter hub for connection with a drive shaft to enable the hub to pivot universally in relation to a rotational axis of the drive shaft, said hub including an inner surface provided with an arcuate curvature, an adapter drivingly connected to the drive shaft, said adapter having an arcuately curved outer surface engaged with said arcuately curved inner surface on the hub to enable pivotal movement of the hub in relation to the adapter, and torque transmitting structure interconnecting the outer surface of the adapter and the inner surface of the hub for driving said hub, and a retainer associated with said hub and adapter to retain said

torque transmitting structure in assembled interconnected relation to the hub and adapter.

13. The hub as defined in claim 12, wherein said torque transmitting structure includes a pair of projections diametrically opposed on the arcuately curved outer surface of the adapter, the arcuately curved inner surface of said hub including a pair of diametrically opposed recesses aligned with and receiving the projections on said outer surface of the adapter, each of said recesses in the inner surface of the hub having one end extending to one end of the hub to enable insertion of the projections on the adapter when the outer surface of the adapter is engaged with the inner surface of the hub, the recess in the inner surface of the hub an inner end spaced inwardly from the other end of the hub, said recesses in the inner surface of the hub enabling axial insertion of the adapter and torque transmitting members, said retainer including an obstruction in said one end of said recesses to retain the torque transmitting members in said recesses.

14. The hub as defined in claim 13, wherein said torque transmitting members are spherical balls on the curved outer surface of the adapter, said recesses in the inner surface of the hub being substantially semicylindrical to enable insertion of said adapter and said balls into the recesses in the inner surface of the hub, said obstruction being in the form of a plate forming a closure for said one end of each of said recesses in the hub.

15. The hub as defined in claim 13, wherein said torque transmitting members are spherical balls on the curved outer surface of the adapter, said recesses in the inner surface of the

hub being substantially semicylindrical to enable insertion of said adapter and said balls into the recesses in the inner surface of the hub, said obstruction being in the form of a spring pin inserted into said one end of each of said recesses in the hub to prevent the ball transmitting balls from exiting the recesses in the hub.